



**THE EFFECT OF YOGASANA ON ATHEROSCLEROSIS HEART DISEASE**

<sup>1</sup>Phatak D Shruti ,

<sup>1</sup>Ph.D. Scholar (Kriya Sharir) , Tilak Maharashtra Vidyapeeth, Pune -37 , Maharashtra , India

**ABSTRACT**

**Historical Review:** *Yoga* and *Ayurveda* have same basic terminology being complementary to each other .*Swasthyarakshan* and *Vyadhiparimoksha* both could be achieved through *Yoga* and it could be one of the powerful ‘Therapeutic Modality’ (*Chikitsa Upakrama*) also . *Yogic* exercise could be termed as *Vihar Chikita* .*Yoga* plays a vital role in normalizing physiology of body and mind .

**Atherosclerotic Heart Diseases** are common pathological conditions in today’s era. Atherosclerosis is characterized by intimal lesions called fibro-fatty plaques that protrude into and obstruct vascular lumen ,weaken it . The narrowing of arteries limits the flow of oxygen-rich blood to parts of the body. *Yogopachar* is thought to contribute in treating the condition up to certain extent or improving the quality of life parameters in such conditions . Pilot study was conducted to assess the efficacy of *Yogopachar* in Chronic Ischemic Heart Disease patients due to atherosclerotic changes .

**Aim:**

1) To assess efficacy of *Yogopachar* in Atherosclerotic Heart Diseases .

**Objectives:**

1) To assess efficacy of *Yogopachar* for improvement of quality of breathing ( depth, duration).

2) To assess efficacy of *Yogopachar* for improving psychological health by assessing Quality of Life in terms of positivity of mind , quality of sleep and level of fatigue.

**Results**

1) Gradual increase in the elasticity of the rib cage and spine .

2) Breathing process became deeper and fuller.

3) Quality of Life improved with gradually increased energy level with more freshness and positive mind .

**Keywords:** *Yogopachar* , Atherosclerotic Heart , *Panchabhautik Chikitsa*.

**INTRODUCTION :**

*Yoga* and *Ayurveda* have emerged from same soil having same basic terminology being complementary to each other . *Panchbhautik* concept , *Tridosha* concept , *Dosha Dhatus Mala* Concept , Qualities of Mind (*Manas Dosha* and *Guna*) , *Agni Siddhanta* are accepted by both Sciences . Maintenance of health ( *Swasthyarakshana* ) and freedom from diseases

(*Vyadhiparimoksha*) both could be achieved through *Yoga* <sup>[1]</sup> and could be one powerful ‘Therapeutic Modality’ (*Chikitsa Upakrama*) also . *Yogic* exercise could be termed as *Vihar Chikita* . It is a well-known fact now that *Yogic* exercises very well reverse and control many pathological conditions . *Yoga* plays a vital role in

normalising physiology of body and mind .

Atherosclerotic Heart Diseases are common pathological conditions in today's era as a result of new age life style. Atherosclerosis is characterised by intimal lesions called fibro-fatty plaques that protrude into and obstruct vascular lumen , weaken it . Narrowing of arteries limits the flow of oxygen-rich blood to parts of the body. Risk factors include high blood pressure, diabetes, smoking, obesity, family history, and an unhealthy diet.<sup>[2]</sup> Atherosclerotic disease often involve cardio vascular system being the major cause of concern . In most of the cases of Ischemic Heart Disease root cause is atherosclerotic changes in coronary arteries (90%). Narrowing or obstruction of coronary arterial system is the most common cause of myocardial anoxia , the alternate term 'coronary artery disease' which is used synonymously with IHD i.e. Ischemic Heart Disease .<sup>[3],[4]</sup>

Atherosclerosis is a hardening of an artery specifically due to an atheromatous plaque. Atherogenesis is the developmental process of atheromatous plaques. It is characterized by a remodelling of arteries leading to sub-endothelial accumulation of fatty substances called plaques. The build-up of an atheromatous plaque is a slow process, developed over a period of several years through a complex series of cellular events occurring within the arterial wall and in response to a variety of local vascular circulating factors. The ensuing inflammation leads to formation of atheromatous plaques in the arterial tunica intima, a region of the vessel wall located between the endothelium and the tunica media. The bulk of these lesions is made of excess

fat, collagen, and elastin. At first, as the plaques grow, only wall thickening occurs without any narrowing. Stenosis is a late event .

The plaque is divided into three distinct components:

- 1) The atheroma , which is the nodular accumulation of a soft, flaky, yellowish material at the centre of large plaques, composed of macrophages nearest the lumen of the artery .
- 2) Underlying areas of cholesterol crystals
- 3) Calcification at the outer base of older or more advanced lesions.<sup>[5]</sup>

*Yogopachar* is thought to contribute in treating the condition up to certain extent or improving the quality of life parameters in such conditions . So to assess the efficacy of *Yogopachar* in Chronic Ischemic Heart Disease patients due to atherosclerotic changes following pilot study was conducted .

#### **AIM:**

- 1) To assess efficacy of *Yogopachar* in Atherosclerotic Heart Disease.

#### **OBJECTIVES :**

- 1) To assess efficacy of *Yogopachar* for improvement of quality of breathing ( depth, duration ).
- 2) To assess efficacy of *Yogopachar* for improving psychological health by assessing QOL in terms of positivity of mind , quality of sleep and level of fatigue.

#### **MATERIALS AND METHODS :**

A small pilot study in patients of Atherosclerotic Heart Disease was conducted in 10 randomly selected Atherosclerotic Coronary Artery Disease subjects.

#### **INCLUSION CRITERIA :**

- 1) Subjects having Atherosclerotic Heart Disease between 40 to 60 years of age of either sex.

2) Having further mentioned concomitant conditions -

- a) high blood lipid profile ,
- b) history of Angina Pectoris with changes in ECG ,
- c) Diabetes Mellitus ,
- d) Hypertension ,
- e) concomitant cervical or lumbar spondylitis .

\*These conditions are included in inclusion criteria because generally any of these conditions might co-exist in subjects of Atherosclerotic Heart Diseases .

\*Subjects having only mild to moderately increased biochemical parameters and having history of mild severity of Angina Pectoris and spondylitis only were included in the study . Both conditions were confirmed through ECG and X ray respectively.

#### **EXCLUSION CRITERIA :**

- 1) Subjects having severe Atherosclerotic Heart conditions .
- 2) Having complications of Diabetes Mellitus , Hypertension .
- 3) Severe spine conditions like spondylolisthesis, Spina Bifida , any congenital abnormality were excluded from the study.

Following *Yogic* postures were given to the subjects strictly as per their physical capacity and with the help of props (to minimize exertion) under able guidance .

- 1. *Viparit Dandasana* ( on floor with small fold of towel )
- 2. *Merudandasana* (on chair)
- 3. *Kapotasana* one leg on bench OR on floor
- 4. *Supta virasana*( with bolster on bench ) OR
- Supta virasana* (with bolster on floor )
- 5. *Supta baddha konasana*.
- 6. *Setubandha*.
- 7. *Shavasana*

These *Asanas* were made to perform taking help of props (like pillow, fold

of turkish towel or bedsheet ,wooden bench, chair etc.) to minimise exertion and making them most effortless. All these postures were given to the subjects gradually and strictly within their physical capacity , one by one in increasing duration . Duration of *Asanas* was counted by number of breaths inhaled starting from 10 breaths and increased up-to 40-50 breaths. The concept of *Ardhashakti Vyayaam* was followed strictly while doing *Yogasana* . Subjects were made to perform *Asanas* within their cardio vascular capacity. Subjects should do them with utmost comfort level and should not exert themselves.

*Asanas* were performed preferably in early morning with light stomach and wearing light, loose clothes of cotton in quiet and calm atmosphere .

Abovementioned *Yogic* regimen was followed by subjects regularly for 3 months under strict guidance of Doctor , *Yoga* instructor and observations were done.

Before starting the study following biochemical and other parameters were assessed in selected subjects of IHD :

- 1) Blood glucose level
- 2) Serum cholesterol level
- 3) ECG
- 4) Routine systemic examination : pulse, BP, Breathing .

During the study span subjects were asked to continue their routine drug and diet regimen.

During the study span of 3 months subjects were assessed by clinical parameters after every 15 days ( total 7 times including basal ).

At the end of the study (after 3 months) Biochemical parameters and ECG were assessed.

In clinical assessment quality of life assessment was done by abovementioned protocol <sup>[6]</sup>.

Duration of breath was assessed using stop watch and depth of breath by simple technique of thread method . Patient

was asked to breathe in and out deeply and piece of thread was held 12-14 inches distance from nose. Movements of thread (feeble/ medium/ appreciable) were noted. Simultaneously patient was asked to keep his right palm on naval region of abdomen to feel the movements of abdominal wall.

Quality of Life was assessed by questioning the patient and given gradations. Total 10 grades were provided. Measuring scale was used for it. Total 10 cms. were used as 10 grades for assessment. Subjects ticked the grade according to their subjective feeling.

Ticking 2-3 grades(2-3 cms) small improvement, 4-6 grades (4-6 cms) moderate improvement, 7-8 grades(7-8 cms) and above appreciable improvement. By giving 10 small grades (10 cms) considering each grade equivalent to 10% out of 100, easily could be converted in percentage.

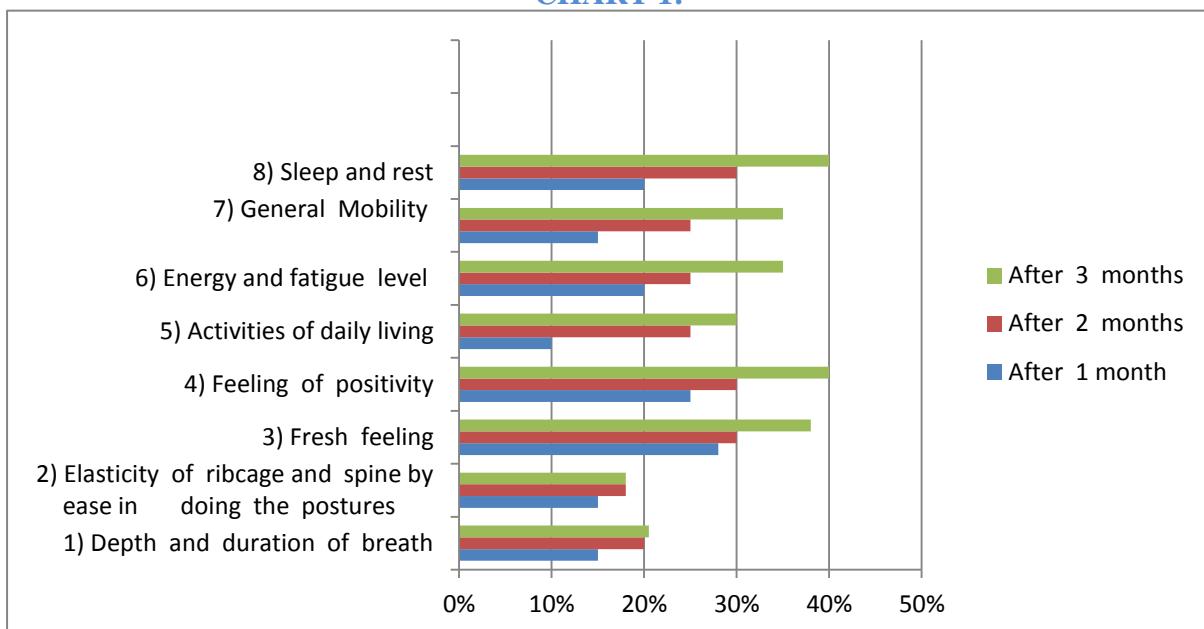
### OBSERVATIONS AND RESULTS :

As given in the methodology the protocol was followed. Initially before starting the study all assessments were done as basal and then followed them as per scheduled timeline as per protocol. Following are the observations of the parameters assessed :

TABLE 1: [7],[8]

	After 1 month	After 2 months	After 3 months
1) Depth and duration of breath	15%	20%	20.5 %
2) Elasticity of ribcage and spine by ease in doing the postures	15%	18%	18%
3) Fresh feeling	28%	30%	38%
4) Feeling of positivity	25%	30%	40%
5) Activities of daily living	10%	25%	30%
6) Energy and fatigue level	20%	25%	35%
7) General Mobility	15%	25%	35%
8) Sleep and rest	20%	30%	40%

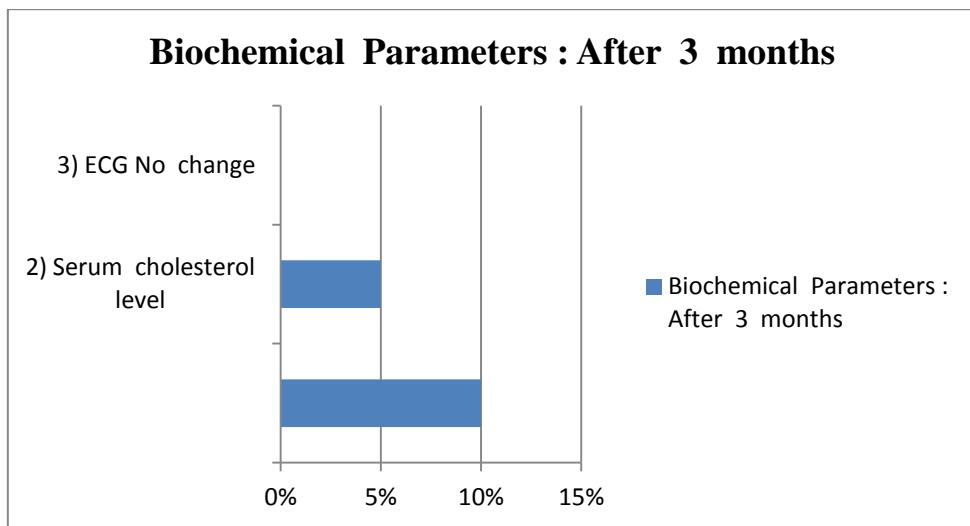
CHART 1:



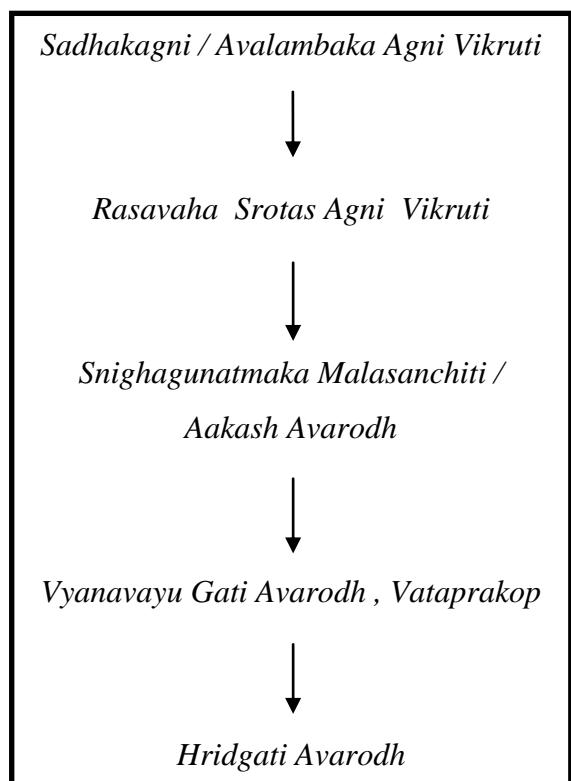
**Table 2 : Biochemical Parameters :**

	After 3 months
1) Blood glucose level	Mild improvement of 10%
2) Serum cholesterol level	Mild improvement of 5 %
3) ECG	No change

**CHART 2:**



## DISCUSSION:



According to Ayurvedic understanding heart is the seat of *Avalambak Kapha* , *Sadhak pitta* , *Vyan vayu* , *Manasa* (Mind) , *Chitta-Antahkarana* . *Hridaya* or heart is the centre of *Rasavaha Srotas* from where under the function of *Vyan Vayu* , *Rasa-Rakta* being circulated throughout the body . Heart has spaces (auricular , ventricular , great vessels attached to heart) representing *Aakash Mahabhoot* , Systolic and diastolic movements - represent *Vayu Mahabhoot* , Myocardium - or musculature of heart - *Prithvi Mahabhoot* , high energy producing system in myocardium - *Tej Mahabhoot* and pericardial protective layer of fluid represents *Jala Mahabhoot* . Perfect balance between all five elements is the state of health for the heart .

Any organ is a combination of space , mass and kinetic force or movements . Certain balance between all these factors is maintained in the state of health . Vyadhi or disease is losing any of these element's balance or limit . In Ischemic Heart Diseases arising from Coronary Artery Atherosclerosis , *Sadhakagni* and *Avalambaka Agni Vikruti* , *Rasavaha Srotas Agni Vikruti* , *Snighagunatmaka Malasanchiti* resulting in *Aakash Avarodh* , *Vyanavayu Gati Avarodh* , *Vataprakop* and *Hridgati Avarodh* are major events in *Samprapti* . In Atherosclerotic diseases of heart - changes in the endothelium of vessels , increased blood cholesterol which results in loosing it's *Panchabhautik* balance i.e. *Khavaigunya* ( Loss of integrity ) .

Plaque formation from cholesterol , lipoid material & lipophages - *Malasanchiti* , Narrowing of the vessels of heart - *Srotorodha* disturbances in movements & distribution of blood - *Vataprakopa* ( Disoriented movements ) is observed in the state of deranged *Panchabhautik* balance within the organ .

To reverse this situation 'Yoga therapy' can be an efficient way to re-establish the functions of 'Aakash' and 'Vayu Mahabhoot' . Up to certain extent space, mass, dynamicity within the organ can be re-established.

*Merudandasana* , *Viparit Dandasana* improve elasticity of ribcage and spine. In *Asanas* like *Supta Virasana* , *Supta Vajrasana* torso of the body remains parallel to ground , minimizing gravitational force over cardiovascular center ( heart ,lungs ) giving them maximum rest . Breathing process becomes deeper with more lung capacity.

*Kapotasana* improves the elasticity of

abdominal cavity by improving elasticity of naval and leg muscles . *Asanas* like *Supta Virasana* , *Supta Vajrasana* , *Setubandh* create more space for cardiovascular movements and facilitates efficient movements of thoracic cage , abdominal space and diaphragm as well, improving the overall circulation , co-ordinating the space and movements ( kinesiological relation ) between thoracic and abdominal space .

#### **CONCLUSION:**

- 1) Gradual improvement seen in elasticity of ribcage and spine .
- 2) Breathing process became deeper with more lung capacity.
- 3) Improvement in overall circulation co-ordinating the space and movements.

Improvement in *Shakha-Koshtha Gati* within cardiovascular system .

- 4) Gradual increase in energy level .
- 5) More fresh and positive feeling.
- 6) In few subjects after long follow up ( up to 3-6 months ) though ECG changes were not reversed but definitely all above mentioned clinical parameters were fairly improved .

Therefore instead of focusing much on biochemical and Electro-cardiographical parameters subjective feeling of well-being becomes more important parameter . Maintaining *Dosha Dhatu Mala Samyata* in concerned organ is very vital parameter of assessment .

Re-establishing *Aakash* and *Vayu Tatva* functionally to reverse the pathophysiology to some extent of the Atherosclerotic heart diseases by improving flexibility of ribcage , thus making movements of organs ( lungs, heart chambers and great vessels- within the Cardiovascular System) in it more easy.

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#### Corresponding Author:

Dr. Shruti D Phatak.,Ph.D. Scholar (Kriya Sharir) , Tilak Maharashtra Vidyapeeth, Pune -37, Maharashtra , India

Email: [sdp129@rediffmail.com](mailto:sdp129@rediffmail.com)

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